

June 5, 2008

Via Electronic Filing

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Ex Parte Presentation* – Service Rules for Advanced Wireless Services
WT Docket Nos. 04-356 & 07-195

Dear Ms. Dortch:

On June 4 and 5, 2008, CTIA – The Wireless Association® conducted meetings at the Federal Communications Commission (“FCC” or “Commission”) on proposed service and technical rules for the Advanced Wireless Service (“AWS”) 2 and 3 bands. On Wednesday, June 4, 2008, Christopher Guttman-McCabe, Vice President, Regulatory Affairs, Paul Garnett, Assistant Vice President, Regulatory Affairs, and David Redl, Counsel, Regulatory Affairs, CTIA – The Wireless Association®, along with Adam Krinsky, Wilkinson Barker Knauer, Steve Sharkey and Rob Kubik, Motorola, Jeanine Poltronieri, Mike Roden (via teleconference) and David Shively (via teleconference), AT&T Mobility, George Wheeler, Holland & Knight, Don Brittingham, Verizon Wireless, Patrick Welsh and Pablo Tapia, T-Mobile USA, Derek Khlopin, Nokia, Grant Spellmeyer, U.S. Cellular, William Mueller (via teleconference), Avago, and Mark Racek (via teleconference), Ericsson, met with Julius Knapp, Chief, Ira Keltz, Deputy Chief, Bruce Romano, Associate Chief (Legal), Geraldine Matisse, Chief, Policy and Rules Division, Patrick Forster, Senior Engineer, Policy and Rules Division, Jamison Prime, Ahmed Lahjouji, Nicholas Oros, and Alan Stillwell, Office of Engineering and Technology, and Marty Liebman, Wireless Telecommunications Bureau, to express concerns about harmful interference that would be caused by the proposed technical rules for these spectrum bands. Likewise, on Thursday, June 5, 2008, Steve Largent, President and Chief Executive Officer, Christopher Guttman-McCabe, Vice President, Regulatory Affairs, and Paul Garnett, Assistant Vice President, Regulatory Affairs, CTIA – The Wireless Association®, met with FCC Chairman Kevin J. Martin and Aaron Goldberger, Legal Advisor to the Chairman, to discuss CTIA’s request for additional time for the FCC to consider the legitimate concerns raised by a broad cross-section of interested parties about the impact of the proposed technical rules.

The AWS order slated for adoption at the June 12 Open Meeting, as reported in the trade press, is misguided from a legal, policy and technical perspective. The proposal upends two decades of spectrum policy in favor of a specially tailored auction designed to advance the particular business model of a single company. Moreover, this business plan – including free broadband – has a track record of failure. The FCC order would in effect make the U.S. Government a partner in this venture by shaping an auction (and sacrificing the corresponding revenue) to ensure the outcome. As detailed below, prior FCC efforts to craft an auction around a single business plan have failed – and we expect this will be no exception. Equally troubling, the technical rules under consideration create significant interference problems for adjacent commercial mobile spectrum (PCS, AWS-1) – crucial bands for the deployment of mobile wireless broadband. These rules would put at risk hundreds of millions of devices already in the hands of consumers. Moreover, the rules would undermine the significant efforts and investment made by the Commission, other U.S. Government agencies, carriers and manufacturers over the

past decade to allocate, license, and deploy service in the AWS-1 band. The technical rules put these efforts and, quite literally, billions of dollars of investment at risk.

Despite claims by some, the proposed order is not the only alternative for the spectrum. As the record demonstrates, parties have called on the Commission to make AWS-3 available as downlink spectrum for asymmetric pairing to enable more robust wireless broadband offerings to compete with cable and wireline.¹ Many smaller entities are eager to access AWS-2 paired spectrum to deploy wireless broadband.² The Commission should balance the benefits of the various plans, taking into account the interference risks of each plan as part of the calculus.

CTIA—The Wireless Association® urges the Commission to reject the proposed approach, or at least to conduct a more fulsome review prior to taking action. As part of this review, the Commission could conduct publicly-reviewable handset testing. This process will ensure that the technical rules are thoroughly vetted so that other services, existing customers, and significant investment are not put at risk by these proposals. It will also allow for a more comprehensive assessment of the proposed auction rules.

GOVERNMENT-ENGINEERED WIRELESS BUSINESS PLANS MAKE BAD PUBLIC POLICY

History demonstrates that the public interest is best advanced by the Commission's long-standing flexible-use spectrum policy, which provides spectrum licensees the freedom to innovate and respond to consumer demands. According to press reports, the FCC could turn away from that record of success in the AWS-3 spectrum in favor of an alternative approach to spectrum management: auction rules in which businesses offer up their preferred packages of public interest benefits in exchange for specially tailored auctions. Yet history has proven that prescriptive auction regulation ultimately undermines the public interest, rarely achieves its advertised benefits, and is a poor substitute for allowing the marketplace to function freely.

Today's Wireless Marketplace – More Investment, More Coverage, More Broadband, Lower Prices. Wireless service providers are investing massive sums of capital to expand network capacity and coverage, and to deploy and upgrade broadband, to meet consumer demand. Indeed, in the last three years, wireless carriers have invested over \$70 billion in incremental capital to do just that (this figure does not include spectrum acquisition costs such as auctions or secondary market transactions).³ Today, roughly 99.8 percent of the total U.S. population has

¹ See e.g., Comments of T-Mobile USA, Inc. at 4, WT Docket No. 07-195 (Dec. 14, 2007); Reply Comments of T-Mobile USA, Inc. at 3, WT Docket No. 07-195 (Jan. 14, 2008).

² See, e.g., Copper Valley Telephone Cooperative *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); CentraCom Interactive *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Penasco Valley Telecommunications *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Van Buren Telephone Co., Inc. *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Midstate Communications *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); New Ulm Telecom, Inc. *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Kennebec Telephone Co., Inc. *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Big Bend Telephone *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); Rural Broadband Group *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008); and Marne & Elk Horn Telephone Company *Ex Parte*, WT Docket Nos. 07-195 and 04-356 (June 3, 2008).

³ See CTIA's *Wireless Industry Indices, Semi-Annual Data Survey Results: A Comprehensive Report From CTIA Analyzing the U.S. Wireless Industry, Year-End 2007 Results*, at p.124 (rel. May 2008).

one or more different mobile wireless service providers in the census block in which they live.⁴ An analysis commissioned by CTIA reveals that today's wireless service providers already provide 3G wireless service to 92 percent of the U.S. population.⁵ And, consumer demand for wireless broadband has been remarkable – the most recent FCC study shows that mobile wireless accounted for 72 percent of the increase in high-speed lines during the first half of 2007.⁶ At the same time, Americans have benefited from an extraordinary drop in pricing. In the twelve years since 1994, revenue-per-minute, considered “a good proxy for mobile pricing,” has fallen from \$0.47 in 1994 to \$0.07 in 2006, a decline of 85 percent.⁷

While the business model promises “deployment of facilities throughout the United States,”⁸ it is not at all clear that the AWS-3 licensee would extend coverage beyond today's wireless providers. Given the rapid deployment of 3G wireless services, existing providers will likely exceed the 95 percent population coverage requirement long before the ten-year deadline proposed here. Moreover, to the extent unserved areas remain, there is no reason to believe that the AWS-3 licensee's build-out will reach these areas sooner than current systems.

It is important to note the number of new wireless broadband competitors that are emerging in the marketplace without auctions tailored to their specific business model. Existing wireless service providers are upgrading their networks for more and better broadband service, and a host of new entities are entering the market. In the past two years, over 100 bidders won licenses both in the AWS-1 auction and the 700 MHz auction. While nationwide players like Sprint/Clearwire and SpectrumCo hold significant promise, there are many smaller licensees, such as AWS-1 licensees Stelera and NTELOS, which are building broadband systems in rural areas. If anything, the proposed order threatens to skew the market as competitors like these would be required to contend with a licensee that obtained spectrum at a reduced price, in effect offering subsidized broadband for free. The proposal affects all broadband providers, especially those that just acquired spectrum at market-based rates. Moreover, it is not at all clear what market failure the auction rules proposed here are designed to address.

Customized Auction Rules – A Record of Failure. Even assuming there was some problem that needed to be solved, FCC efforts to craft an auction to advance a single company's business plan have proved ineffective. Indeed, in many cases, the company that the rules were

⁴ See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, *Twelfth Report*, 23 FCC Rcd 2241, 2245 (2008).

⁵ CostQuest Associates, *U.S. Ubiquitous Mobility Study* (April 17, 2008), filed as attachment to Comments of CTIA, WC Docket No. 05-337 (filed April 17, 2008) (“*Mobility Study*”). The study found that 23.2 million U.S. residents live in areas without 3G coverage. The Census Bureau estimated that, on January 1, 2008, the U.S. population was approximately 303.1 million. Press Release, “Census Bureau Projects Population of 303.1 Million,” U.S. Census Bureau (Jan. 11, 2008), available at www.census.gov/Press-Release/www/releases/archives/population/011108.html. Thus, the *Mobility Study* reveals existing coverage of over 92% of the population.

⁶ See *High-Speed Services for Internet Access: Status as of June 30, 2007*, Table 1 (IATD/WCB rel. Mar. 2008).

⁷ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, WT Docket No. 07-71, *Twelfth Report*, FCC 08-28 at ¶ 199 (rel. Feb. 4, 2008).

⁸ *M2Z Ex Parte*, WT Docket No. 04-356 & 07-195, at 4 (filed June 3, 2008).

designed to “help” ultimately did not bid. A result that is also quite possible here.⁹ The examples of these policy missteps are plentiful, a few are described below:

- *D Block*. With the best of intentions, the FCC established rules that largely mirrored the business plans of one company, Frontline, seeking to leverage commercial investment for public safety broadband. In the end, Frontline did not even participate in the auction, and there was no winning D Block bid. The FCC is now reassessing D Block policy.
- *MVDDS*. In response to advocacy by one company, the FCC adopted rules to shoehorn a terrestrial MVPD service into the DBS spectrum.¹⁰ Like the current case, the company pressed the FCC for a license without an auction.¹¹ The FCC instead chose to auction the spectrum rights applying rules tailored to the company’s business plan. That company never showed up at the auction, and in the years since scant deployment has taken place.¹²
- *1670-1675 MHz*. One company pushed aggressively for a nationwide license to provide wireless broadband service.¹³ The FCC adopted a nationwide license. The company could not gather the resources to show up at the auction.¹⁴
- *DBS Orbital Slot at 61.5*. One company advocated limiting eligibility for the DBS auction of 2 channels at the 61.5 degrees W.L. orbit location.¹⁵ The FCC adopted the eligibility restriction. After obtaining rights to the spectrum, the company soon afterwards sold its operations to an incumbent, thus exiting the business.¹⁶

This list vividly illustrates the risk facing the FCC’s policy choice for AWS-3. In each of these cases, the FCC acted with the best of intentions to shape the auction toward a favored

⁹ See COMMUNICATIONS DAILY, June 3, 2008 (“M2Z hasn’t put out a statement on auction plan, but CEO John Muleta said Monday the company remains intact and interested in the spectrum, which it originally tried to get without having to buy it in auction.”)

¹⁰ See Amendment of Parts 2 and 25 of the Commission’s Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; ET Docket No. 98-206, 16 FCC Rcd 4096, 4177 ¶ 213 (2000) (permitting MVDDS operations in the 12.2-12.7 GHz band pursuant to a petition for rulemaking filed by Northpoint Tech. Ltd.); *aff’d on recon.*, 17 FCC Rcd 9614 (2002).

¹¹ See Amendment of Parts 2 and 25 of the Commission’s Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; ET Docket No. 98-206, *Memorandum Opinion and Order and Second Report and Order*, 17 FCC Rcd 9614, 9710-11 ¶ 250 (2002) (subjecting MVDDS to competitive bidding).

¹² See Public Notice, “Auction of MVDDS Licenses; Three Bidders Qualified to Participate in Auction No. 63,” 20 FCC Rcd 18016 (WTB 2005).

¹³ See Amendments to Parts 1, 2, 27 and 90 of the Commission’s Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands, WT Docket 02-8, *Report and Order*, 17 FCC Rcd 9980, 9991-92 ¶ 19 (2002) (adopting a single nationwide license plan as proposed by ArrayComm, Inc.).

¹⁴ See Public Notice, “Auction of License for 1670-1675 MHz Band, Two Qualified Bidders,” 18 FCC Rcd 7115 (WTB 2003).

¹⁵ See Auction of Direct Broadcast Satellite Licenses, *Order*, 19 FCC Rcd 23849, 23853-56 ¶¶ 9-15 (2004).

¹⁶ See Rainbow DBS Company LLC, Assignor and EchoStar Satellite L.L.C., Assignee, *Memorandum Opinion and Order*, 20 FCC Rcd 16868 (2005) (granting assignment of authority to operate a DBS space station at the 61.5° orbital slot).

outcome. In each case, the results show how ineffective and counter-productive these policy approaches truly can be. The FCC should learn the lessons of this history, not repeat it.

This Particular Business Model – a Record of Failure. The Commission should take note that those businesses that have tried to provide free services like the broadband service under consideration here have failed in the marketplace.

Businesses based on plans to adopt a free Internet service business model have been tried before – and failed. Free, advertiser-supported Internet access has been tried as far back as the mid-1990's. NetZero, Inc., Juno Online Services, Spinway, Freei, and Bluelight all tried this model, and all failed. Spinway, Freei, and Bluelight went bankrupt and were bought by United Online.¹⁷ NetZero and Juno, also owned by United, have evolved their model away from a focus on advertiser-supported free service.¹⁸ These early providers of free dial-up Internet services quickly discovered that they could not make these business plans profitable.¹⁹

Throughout the country, efforts have collapsed to establish municipal Wi-Fi networks in which low-cost or free tiers of service were to have been offered to address broadband access concerns.²⁰ Even plans calling for “premium” services to subsidize the provision of free services have failed.²¹ The notion of premium subscriptions economically carrying a free broadband offering has failed in part because of significant questions about “customer demand.”²² The most high profile failure for municipal Wi-Fi occurred in Philadelphia, where EarthLink last month announced the shut-down of its municipal network, saying that it could not even arrange for the transfer of its network to a new owner at no cost.²³ Similarly, other large cities have seen their

¹⁷ See Verne Kopytoff, “Bluelight Buys Spinway”, San Francisco Chronicle, C2 (Dec. 5, 2000); *see also* “NetZero Acquires Key Assets of Freeinternet.com; Transaction Approved by Bankruptcy Court”, Business Wire, Nov. 1, 2000 *available at* http://findarticles.com/p/articles/mi_m0EIN/is_2000_Nov_1/ai_66572053 (last accessed June 5, 2008); Lizette Wilson, “It’s lights out for bankrupt Kmart’s BlueLight.com”, San Francisco Business Times, Nov. 8, 2002 *available at* <http://www.bizjournals.com/sanfrancisco/stories/2002/11/11/newscolumn6.html> (last accessed June 5, 2008).

¹⁸ NetZero’s free service, for example, is limited to 10 hours of dial-up access per month, and the focus is on their paid services. See, <http://account.netzero.net/s/landing?action=viewProduct&productId=free>

¹⁹ See Laurie J. Flynn, *Days of Plenty Are Over at Free Internet Services*, THE NEW YORK TIMES (Jan. 1, 2001), *available at* <http://query.nytimes.com/gst/fullpage.html?res=980CEEDC153BF932A35752C0A9679C8B63>.

²⁰ See John Cox, *Municipal Wi-Fi 2.0*, NETWORK WORLD (Apr. 21, 2008), *available at* <http://www.networkworld.com/cgi-bin/mailto/x.cgi?pagetosend=/export/home/httpd/htdocs/research/2008/042108-municipal-wifi.html&pagename=/research/2008/042108-municipal-wifi.html&pageurl=http://www.networkworld.com/research/2008/042108-municipal-wifi.html&site=wirelessmobile> (quoting Stan Schatt, vice president and research director at ABI Research: “It’s pretty clear that ‘free Wi-Fi’ was an unrealistic expectation. . . . What’s happened is that the early business models didn’t work. They weren’t realistic.”); *see also* Lisa Leff, *Earthlink bows out of San Francisco Wi-Fi deal*, SAN FRANCISCO CHRONICLE (Aug 30, 2007), *available at* <http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2007/08/29/financial/f193633D05.DTL>.

²¹ See Lisa Leff, *Earthlink Bows out of San Francisco Wi-Fi deal*, SFGATE.com (August 30, 2007) (noting that prior to dropping out of the deal, Earthlink had “planned to try to recoup its investment (in free service) by charging \$21.95 per month for a premium Wi-Fi service.”), *available at* <http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2007/08/29/financial/f193633D05.DTL>.

²² *Id.*

²³ See Matt Kapko, *EarthLink can’t give away Philly’s Wi-Fi network, Company to shut down operation within 30 days*, RCR WIRELESS NEWS (May 13, 2008), *available online at* <http://www.rcrnews.com/apps/pbcs.dll/article?AID=/20080513/FREE/949478315>.

plans for municipal Wi-Fi cancelled, including Chicago, IL, Springfield, IL, San Francisco, CA, Houston, TX, St. Louis, MO, Sacramento, CA, New Orleans, LA, and Portland OR. A host of smaller cities like Concord, CA, Cupertino, CA, Foster City, CA, Riverside, CA, San Jose, CA, Santa Clara, CA, and Sunnyvale, CA, whose plans were developed with Internet service providers who have decided the business model doesn't work, also face uncertain – or no – futures.²⁴ Others still, like Anaheim, CA, Corpus Christi, TX and Milpitas, CA are now faced with trying to find a service provider for networks that are in place but were being managed by Earthlink.²⁵ Last month, MetroFi, whose service was based on “ad-supported no-fee access, coupled with paid, no-ads service, and higher tiered commercial offerings” announced it was exiting its nine markets by either selling its networks, or shuttering them if they cannot find a buyer.²⁶

In light of this history, on what basis does the Commission conclude that the business model it plans to mandate is, in fact, viable on a national scale? Given the stakes – and the inherent value in this spectrum – the Commission should conduct its own assessment to explore the extensive history of failures of this model. The proposal raises more practical questions than it answers about how this business model will be implemented and how the promise of free broadband will be achieved. Will the licensee provide free broadband to all comers? Is access to free broadband on a first-come, first-served basis? What happens if demand for free broadband outstrips the mandated 25 percent network capacity? Will the licensee make more network capacity available at no cost? Will the licensee guarantee the required 768 kbps download speeds? What quality of service will the licensee deliver to consumers of its free broadband service? Will the “free” offering provide unlimited downloads? Will customer premises equipment and/or handsets be included in the “free” offering? Even proponents of a free broadband requirement express concern “with the long-term viability of the proposed project, given the accelerated timetable, difficulty of implementation, and amount of up-front capital required.”²⁷

Tim Wu in describing why municipal wireless networks have been “such a flop” came to this conclusion: “The result . . . has been telecom's Bay of Pigs—a project the government wanted to happen but left to underqualified private parties to deliver. Firms like Earthlink promised too much, and the cities have stood by and watched as the firms trying to build Wi-Fi systems have twisted and died on the beachhead.”²⁸ Here the FCC runs the same risk. If it creates a set of auction rules to engineer this business plan -- and the marketplace cannot support

²⁴ See “Cities Unwired”, RCR Wireless News, Nov. 17, 2007 *available at* <http://www.rcrnews.com/apps/pbcs.dll/article?AID=/20071117/SUB/71117010/0/cla> (last accessed June 5, 2008); *see also* Tim Wu, “Where’s My Free Wi-Fi?”, Slate.com, Sept. 27, 2007 *available at* <http://www.slate.com/id/2174858/> (last accessed June 5, 2008); W. David Gardner, “Nine More Municipal Wi-Fi Networks Slated for Closing”, InformationWeek, May 19, 2008 *available at* <http://www.informationweek.com/news/mobility/muni/showArticle.jhtml?articleID=207801062> (last accessed June 5, 2008).

²⁵ W. David Gardner, “EarthLink to Pull Philly’s Muni Wi-Fi, Anaheim’s Days Numbered”, InformationWeek, May 14, 2008 *available at* http://news.yahoo.com/s/cmp/20080515/tc_cmp/207800077 (last accessed June 5, 2008).

²⁶ See Glenn Fleishman, *MetroFi Plans Market Exit: Sale or Shutter*, WNN Wi-Fi Net News (May 15, 2008), *available at* <http://wifinetnews.com/archives/008322.html>.

²⁷ Public Knowledge *et al.* Ex Parte Letter, WT Docket No. 07-195, at 2 (June 2, 2008).

²⁸ See Tim Wu, *Why Municipal Wireless Networks Have Been Such a Flop*, Slate, (Sept. 27, 2007)(noting failures of public/private wireless network partnerships and calling for more “public works project”-style government wireless networks offered for “free or near-free, like the local swimming pool,” *available online at* <http://www.slate.com/id/2174858>.

such a model – the FCC will have to clean up mishandled spectrum policy and failed businesses in later years.

CTIA applauds entrepreneurial efforts to innovate in wireless broadband. Indeed, the industry has a long record of innovative pricing models (*e.g.*, bucket of minutes), new technologies (*e.g.*, push to talk), and vast investment and deployment (over 92 percent 3G population coverage). In each case, these innovations have brought tremendous benefits to the American people. Government never mandated these changes, however – and some unsuccessful initiatives failed in the marketplace. The U.S. government was not a business partner in these marketplace failures. AWS-3 threatens to change this relationship.

COMMISSION EFFORTS TO SHOEHORN IN NEW AWS OPERATIONS WILL UNQUESTIONABLY RESULT IN INTERFERENCE TO PCS AND AWS-1

The FCC's proposed technical rules risk causing serious interference to hundreds of millions of PCS devices and AWS-1 devices already in the marketplace, will undermine years and years of effort to make AWS-1 spectrum available for mobile broadband, and will skew billions of dollars worth of wireless broadband investments. At the proposed levels, wherever PCS or AWS-1 signals are weak but still acceptable (*e.g.*, indoors, inside trains, and at the edges of coverage areas), consumers will experience additional lost calls, inability to make/receive calls, lack of location data (E911), and lower data rates when they are in close proximity to the devices the FCC now proposes to authorize. The FCC must allow time and provide transparency into this technical process in order to ensure that existing services are not undercut by these new offerings.

Key Interference Parameters. CMRS operations rely on a technology (frequency division duplex or FDD) that requires frequency separation between mobile transmit and mobile receive bands in order to minimize the risk of mobile-to-mobile interference. For example, the PCS allocation is 1850-1910/1930-1990 MHz and AWS-1 is 1710-1755/2110-2155 MHz.

The ability to limit the risk of mobile-to-mobile interference – whereby mobile transmit can cause interference into a nearby mobile receive (or even within the same device) – is a critical element of wireless service quality. In-band power limits and out-of-band emission limits (OOBE) reduce the potential that mobile transmit will cause interference into mobile receive. Also, filters in mobile receivers block some unwanted transmissions. As Avago representative William Mueller noted in the June 4, 2008, meeting with the FCC's Office of Engineering and Technology, no filter technology exists, however, to address the level of interference to PCS and AWS-1 receivers under the proposal.

H Block (1915-1920/1995-2000 MHz). H Block operations will reduce the frequency separation between mobile transmit and receive from 15 MHz to 10 MHz, and H Block mobile transmit in the 1915-1920 MHz band at proposed levels will cause significant interference into the PCS mobile receive band, 1930-1990 MHz. While today's handsets provide protection between two mobiles operating at a distance of one meter, CTIA submitted two handset test studies in the AWS-2 proceeding showing that the FCC proposal would subject PCS handsets to harmful interference where H Block devices are transmitting 8 meters (26 feet) away in some instances.²⁹ There are hundreds of millions of mobile devices in the U.S. that operate on PCS spectrum and would be significantly affected by operations under the proposed rules. As part of

²⁹ See Comments of CTIA—The Wireless Association, WT Docket Nos. 02-353 & 04-356, at 13 and appendices (filed Dec. 8, 2004).

the AWS-2 proceeding, a group of wireless service providers – some concerned with interference to PCS and another focused on H Block opportunities – struck a compromise proposal that would protect existing services and millions of handsets while providing a meaningful H Block opportunity.³⁰ We urge the Commission to consider the proposal, which fairly balances service quality for existing wireless customers with the interests of new service in the H Block.

AWS-3 (2155-2175/2180 MHz). AWS-3 operations are immediately adjacent to the 2110-2155 MHz portion of the AWS-1 allocation, which is used for mobile receive. The proposed AWS-3 rules would allow time division duplex or TDD operations, which provides for mobile transmit and receive on the same frequencies. If the FCC allows mobile transmit in the lower portion of the AWS-3 band, there will be significant interference to the adjacent channel AWS-1 mobile receivers. Even if a substantial mobile transmit buffer were adopted in AWS-3, stricter power limits in the band still would be needed to avoid serious interference to AWS-1.

The AWS-1 auction raised \$13.7 billion in revenue and carriers and customers are investing in infrastructure and handsets. This proposal puts that investment at risk. T-Mobile, for example, has launched AWS-1 service in New York and will deploy AWS-1 in 25 markets later this year, and consumers have already purchased AWS-1-capable devices. The Commission should weigh AWS-1 consequences as it considers AWS-3 spectrum policy.³¹

CTIA takes this opportunity to respond to recent attempts to justify AWS-3 TDD operations immediately adjacent to the AWS-1 mobile receive band. First, with regard to comparisons to the 700 MHz band, the Commission should not be persuaded by a limited review of the 700 MHz technical rules. While the FCC adopted flexible technical rules for commercial 700 MHz licenses (FDD or TDD, no required duplex direction), the Part 90 700 MHz public safety rules restrict the higher 700 MHz public safety block (793-805 MHz) to mobile transmit operations, while base transmit is permitted in the lower 700 MHz public safety block (763-775 MHz)³² – in practice, this dictates CMRS operations in the 700 MHz band as well. Indeed, real-world deployment plans for the 700 MHz band actually make the point that CMRS providers intend to avoid positioning mobile receive operations adjacent to mobile transmit.

Specifically, since the FCC set the duplex direction for 700 MHz public safety operations, sound engineering dictates the same duplex direction for the CMRS licenses in the Upper 700 MHz band (even if this is not the conventional approach). As a result, the Upper C Block frequencies (746-757 MHz) immediately adjacent to the lower C Block (740-746 MHz) will likely be mobile receive. The Lower 700 MHz paired-block licensees will likely operate in conventional FDD mode, with mobile transmit in the lower block and mobile receive in the upper block. Because the Lower 700 MHz band is immediately adjacent to TV channel 51, licensees can expect to be nearby high-powered broadcast operations in certain areas. As a result, good engineering practice dictates that the lower paired band in the Lower 700 MHz band be used for mobile transmit and the upper paired band for mobile receive. Thus Lower 700 MHz C Block and Upper 700 MHz C Block will both be mobile receive.

In 700 MHz (and elsewhere), licensees have an incentive to work cooperatively with similarly situated license holders to ensure that all operations proceed without interference. In the

³⁰ See Verizon Wireless, Sprint Corporation, Nextel Communications *Ex Parte*, WT Docket Nos. 02-353 & 04-356 (filed Feb. 8, 2005).

³¹ The Commission should consider all options for the band, including limiting its use to fixed wireless services.

³² See 47 C.F.R. § 90.531(a).

AWS-1/AWS-3 context, because the interference would be asymmetrical (received by AWS-1), it is not clear that all parties will have the appropriate incentives to operate under mutually beneficial technical parameters.

Handset Filtering Technologies. Separately, questions have been raised regarding the AWS-1 mobile receive filters that adhere to the global IMT-2000 standard for the mobile receive band, 2110-2170 MHz. As an initial matter, even if manufacturers were to construct U.S.-centric mobile devices with filters designed for receive signals at 2110-2155 MHz, the interference dynamic of mobile transmit adjacent to mobile receive remains. At least 10 MHz of separation between mobile transmit and mobile receive would still be necessary to protect against interference. That 10 MHz should come from AWS-3, not AWS-1.

According to Avago, the world's largest privately held semiconductor company and one of the world largest producers of handset filters, for filters to provide protection between a receiver and a transmitter, a certain amount of spectrum must be dedicated to guard band. This is true regardless of whether or not the transmitter is in the same appliance as the receiver. The guard band has to be wide enough to account for three effects, namely, the steepness of the filter roll off between pass band and desired rejection level, the motion of the filter response over temperature, and part-to-part variation between filters arising from manufacturing process tolerances.

Avago manufactures filters using a technology called FBAR. For present FBAR filtering, Avago would expect to allocate something like 5 MHz to roll off, 3 MHz to processing variations, and 7 MHz to temperature motion (-35 C to +85 C) if designing a filter for 2150 MHz. That equates to about a 15 MHz requirement for the guard band. With some risk, performance improvements might allow Avago to reduce the guard band to about 10 MHz, but improvements beyond this point have not yet been identified. According to Avago, the guard band requirement for “average” filtering might be as wide as 20 MHz.

Consider the case of a receiver operating at the upper end of the AWS-1 receive spectrum with a transmitter operating at the lower end of AWS-3. According to Avago, if a filter is to be used to protect the receiver from the transmitter, then (depending on quality of filtering) some 10 to 20 MHz of spectrum must be maintained between the transmitter and the receiver to ensure the receive filter can provide protection. Avago believes that either the corner of the filter must be moved inside the AWS-1 spectrum, or the transmitter must be moved inside the AWS-3 spectrum, or both.

AWS-1 licensees acquired spectrum at auction with the good faith understanding that interference protection rules would enable meaningful service in the band. Consistent with other CMRS spectrum bands, there was no consideration of placing mobile transmit operations immediately adjacent to the AWS-1 mobile receive spectrum. For example, the International Telecommunication Union (“ITU”) Recommendation for IMT-2000 (the international, third generation standard for mobile wireless systems) included a limited number of frequency arrangement alternatives from 1.7 to 2.2 GHz.³³ The 2110-2170 MHz band is viewed internationally as the downlink component of a paired frequency allocation, and none of the Recommendations suggest using this spectrum for deployment of TDD in an unpaired allocation.

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³³ See Recommendation ITU-R M.1036-3

Sound public policy dictates that the Commission reconsider the direction of the AWS order. The public interest is best advanced by reliance on the Commission's long-standing flexible-use spectrum policies, rather than an auction policy designed for one business plan. Moreover, the Commission must balance its interests in new spectrum services with the impact the technical rules would have on PCS and AWS-1 services, customers, and investment. CTIA urges the Commission to delay the vote on the AWS order and open a dialogue to determine the most appropriate use of this spectrum.

Pursuant to Section 1.1206 of the Commission's Rules, this letter is being electronically filed with your office. If you have any questions regarding this submission, please contact the undersigned.

Sincerely,

/s/ Christopher Guttman-McCabe

Christopher Guttman-McCabe

cc: Chairman Kevin Martin
Commissioner Michael Copps
Commissioner Jonathan Adelstein
Commissioner Deborah Taylor Tate
Commissioner Robert McDowell
Aaron Goldberger
Bruce Gottlieb
Renée Crittendon
Wayne Leighton
Amy Blankenship
Angela Giancarlo
Julius Knapp
Ira Keltz
Bruce Romano
Geraldine Matise
Patrick Forster
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Nicholas Oros
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